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JC20 Rec'd PCT/PTO 29 JUN 2005MULTI-LANGUAGE COMMUNICATION METHOD AND SYSTEM

FIELD OF THE INVENTION

The present invention relates to a multi-language
5 communication method and system for communicating with
and making announcements to a group of people, of
particular but by no means exclusive application in
communicating with aircraft passengers.

10 BACKGROUND OF THE INVENTION

With increased international travel, many carriers,
particularly airlines, have placed great emphasis on
the language expertise of their attendants. Airlines
are particularly sensitive to differing passenger
15 profiles, which vary according to route and season,
and attempt in many cases to concentrate cabin
attendants with particular language skills on flights
to and from the corresponding destination. For
example, an airline based in an English speaking
20 country but flying into or out of Italy might
endeavour to ensure that all cabin attendants speak
Italian.

Further, announcements broadcast over the public
25 address system within an aircraft are commonly
repeated in multiple languages. For a carrier based
in an English speaking country, these might be
English, the language of the place of origin of the
flight and the language of the destination of the
30 flight. Some countries, on the other hand, have more
than one national language, and all such announcements
will generally be repeated in each of these.

- 2 -

- However, most airlines have insufficient crew or attendants with foreign language expertise to handle both the numbers of passengers with foreign language demands and the diversity of those foreign languages.
- 5 In some cases this difficulty is exacerbated by hiring criteria which limit the pool of adequately qualified crew and attendants, as language ability is only one recruitment criterion amongst many.
- 10 In addition, many passengers (particularly if elderly or infrequent travellers) are hesitant to seek assistance, whether by pressing a "call button" and attracting the attention of fellow passengers or otherwise, even if adequate language support is
- 15 available. They may be embarrassed by what they see as calling attention to themselves, or as demanding more than they are entitled to.

Further, playing announcements in multiple languages over the public address system annoys some passengers, who must wait until all the languages versions are complete before they can return to reading, working or partaking of in-flight entertainment. In addition, foreign-language speaking passengers may feel that

25 they are accorded a lower priority, being informed in their native language only after the principal language version (such as the English version) and possibly other foreign-language versions have been completed.

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SUMMARY OF THE INVENTION

The present invention provides a multi-language communication method, comprising:

- 3 -

providing to each of said persons access to a plurality of language options;

receiving from each of one or more of said persons an indication of a respective choice of language chosen by said respective person from said language options;

storing said language choices in a database; and

making said language choices accessible by one or more applications so that said applications can when operated selectively provide output to each respective person in the respective language choice.

Preferably those of said persons who do not choose a language are assigned a language choice being a principal language.

The principal language is simply a default language, and will usually be a national language of the carrier on which the passengers are travelling.

Preferably said application is an announcement system for making an announcement in the form of a public announcement over a public address system in a principal language; and

making said announcement available to each person who has indicated a language choice in the form of a personal announcement over a respective personal address system in said respective language choice;

whereby a respective person who has chosen a language can access said personal announcement in their respective language choice by means of their respective personal address system.

- 4 -

In one embodiment, said application is an announcement system for making an announcement in the form of a public announcement by means of a public announcement system, wherein said announcement is presented by means of said public announcement system in at least each language choice.

Thus, the public announcement system could be a public address system with audio output, an electronic display, a combination of both, or any suitable alternative. The announcement can be made once per chosen language, even if more than one person has chosen a particular language. This avoids redundant repetition of the announcement.

For example, if there are 25 passengers and 10 choose Chinese, 8 choose English and 7 choose Japanese, an in-flight safety announcement or video presentation would be played once in Chinese, once in English and once in Japanese, that is, just enough languages to accommodate all passengers. The principal language would generally be included, even if not actually chosen by one or more passengers.

The present invention provides a multi-language communication method for making an announcement to a plurality of persons, comprising:

- providing to each of said persons access to a plurality of language options;
- receiving from each of one or more of said persons an indication of a respective choice of language chosen by said respective person from said

- 5 -

language options;

making said announcement in the form of a public announcement over a public address system in a principal language; and

5 making said announcement available to each person who has indicated a language choice in the form of a personal announcement over a respective personal address system in said respective language choice;

10 whereby a respective person who has chosen a language can access said personal announcement in their respective language choice by means of their respective personal address system.

15 In one embodiment, the plurality of persons are passengers, such as in an aircraft.

Thus, the principal language could be an official language of the country of origin of the majority of the persons or, in the case of an group of aircraft
20 passengers, the country of origin of the airline. In some cases, there may be a plurality of principal languages (such as where the country of origin has more than one official language), in which case the public announcement can comprise the announcement
25 repeated in more than one language.

Preferably the method includes making said respective language choices accessible by an attendant so that said attendant can anticipate the language needs of a
30 respective person.

Preferably the personal announcement comprises a prerecorded audio translation of the announcement in

- 6 -

the respective language choice of a respective person, played over one or more personal loudspeakers located proximate said respective person.

- 5 More preferably the personal announcement comprises a prerecorded audio translation of the announcement in the language choice of a respective person, accessible by means of a headphone or ear-piece output allocated to said respective person, whereby said respective
10 person can access said personal announcement by means of a headset connected to said output.

Alternatively, the announcement is an audio announcement and the method includes translating said
15 announcement by real-time computer translation into the respective language choice of a respective person to form the personal announcement, and playing said personal announcement over one or more personal loudspeakers located proximate said respective person.

20 In one embodiment the personal announcement comprises a prerecorded text translation of the announcement in the language choice of a respective person, accessible by means of a display allocated to said respective
25 person, whereby said respective person can read said personal announcement on said display.

Alternatively, the announcement is a text announcement and the method includes translating said announcement
30 by real-time computer translation into the respective language choice of a respective person to form the personal announcement, and making said personal announcement accessible by means of a display

- 7 -

allocated to said respective person, whereby said respective person can read said personal announcement on said display.

5 Thus, as the principal announcement is being made over a public address system (such as a set of loudspeaker in an aircraft cabin), those who have selected a language can listen to the same announcement (preferably simultaneously) in their language choice
10 through their headset, or read the personal announcement on the display, or both. Translations can be performed in advance (particularly for standard announcements), or by means of real-time translation software (particularly for non-standard
15 announcements).

Preferably the method also includes making said announcement available to each of said persons who has not indicated a language choice in the form of a
20 personal announcement over a personal address system in said principal language.

Thus, those who do not select a language can still listen to the announcement by means of, for example, a
25 headset but in the principal language.

Preferably said language options are provided to each of said persons by means of a console having a display (such as a screen) and a data entry device (such as a
30 keypad and/or touch-sensitive portions of a display), configured to allow each respective person to select said language option.

- 8 -

Preferably the console also provides access to a plurality of predefined service request options, so that each of said persons can request the corresponding service by means of said console.

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Preferably said one or more persons who have indicated a language choice are presented with said service request options in the respective language choice, and each of said persons who has not indicated a language choice are presented with said service request options in said principal language.

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Thus, a person (such as a passenger) may wish to request one of any number of possible services: for example, that an attendant attend them, that a (particular) drink or item of food be provided to them, that they are unwell, that they require a blanket, that a companion is unwell, or that do not wish to be disturbed.

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Preferably the method also includes providing one or more personal messages to a respective one of said persons by means of said console, said messages being displayed in said language choice where said respective person has indicated such a language choice and in said principal language where said respective person has not indicated such a language choice.

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In one embodiment, the method includes receiving from a respective one of said persons an indication of a temporary choice of language chosen by said person from said language options and applicable to a secondary location, and making said personal

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- 9 -

announcement over a personal address system in said secondary location in said temporary language choice.

Thus, the secondary location could be a rest-room in,
5 for example, an aircraft. The person can indicate a language choice applicable to the rest-room, so that announcements made while that person is in the rest-room will be provided to that person in their language choice. The choice of language could be made in the
10 rest-room, or previously (such as from that person's seat). Indeed, the temporary choice can be made in (or when approaching or just outside) the rest-room by the person's providing identification information (such as a seat number), wherein the method includes
15 setting the temporary language choice to be that person's language choice.

Preferably the method includes setting the temporary language to be the principal language if said person
20 does not indicate a temporary choice of language.

The method may also include providing the secondary location with reset means (such a button or switch coupled to an announcement control system) so that the
25 temporary language can be reset to the principal language.

The present invention also provides a multi-language communication system for making an announcement to a
30 plurality of persons, comprising:

- a database for storing a respective language choice of each of said persons;
- a public address system for making said

- 10 -

announcement in the form of a public announcement in a principal language; and

5 a plurality of personal address systems, each for making said announcement available to a respective person in the form of a personal announcement in the respective language choice of that respective person;

10 a control system operable to select each of said personal announcements on the basis of said public announcement and said language choices, and to direct select each of said personal announcements to the corresponding personal address system of each respective person;

15 wherein said language choice of a respective person comprises said principal language where said person has not indicated a language choice, whereby each of said persons can access said personal announcement in their respective language choice.

20 Preferably said system includes a real-time translation module (such as a server provided with real-time translation software), for providing any one or more of: text to text, text to voice, voice to voice, and voice to text real-time translation, so
25 that said system can provide real-time translations of said announcement.

Thus, content (for example, the personal announcements) can be prepared from the announcement
30 in real time if desired. This module can also be used to translate other content, including messages from one or more of the plurality of persons.

- 11 -

Preferably said respective language choices are accessible by an attendant so that said attendant can anticipate the language needs of a respective person.

5 In one embodiment, the system includes a plurality of input devices, each allocated to a respective one of said persons, operable to input said respective language choice and to convey said choice to said database.

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Thus, the language choice can be made on an aircraft from a passenger's seat.

Preferably the system is operable centrally to be
15 input with a language choice of each of one or more of said persons, so that a system administrator can enter said languages choices.

Thus, a passenger, for example, could indicate a
20 language choice when buying a ticket or obtaining a seat allocation, and this choice could be stored on behalf of the person (though the choice would preferably be overrideable by the passenger once in the aircraft). The default language choice would, as
25 above, be the principal language.

Preferably the system includes a prerecorded audio translation of the announcement in each available language choice, and is configured to play the
30 appropriate audio translation corresponding to the respective language choice of a respective person over one or more personal loudspeakers located proximate said respective person.

- 12 -

More preferably the system includes a prerecorded audio translation of the announcement in each available language choice, and is configured to direct
5 said personal announcement to headphone or ear-piece output allocated to said respective person, whereby said respective person can access said personal announcement by means of a headset connected to said output.

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Alternatively, the system includes a real-time translation module operable to prepare an audio translation of said announcement in each chosen language, said system being configured to play the
15 appropriate audio translation corresponding to the respective language choice of a respective person over one or more personal loudspeakers located proximate said respective person.

20 Preferably the system includes a prerecorded text translation of the announcement in each available language choice, and is configured to display the appropriate text translation corresponding to the respective language choice of a respective person on a
25 display allocated to said respective person.

Alternatively, the system includes a real-time translation module operable to prepare a text translation of said announcement in each chosen
30 language, said system being configured to display the appropriate text translation corresponding to the respective language choice of a respective person on a display allocated to said respective person.

- 13 -

In one embodiment, the system includes both audio and text translations of said announcement, and is operable to play a respective audio translation and display a respective text translation to a respective person.

Preferably the system includes for each of said persons a console for providing said language options said respective person, said console having a display (such as a screen) and a data entry device (such as a keypad and/or touch-sensitive portions of a display), wherein said console is configured to allow each respective person to select said language option.

Preferably the console also provides access to a plurality of predefined service request options, so that each of said persons can request the corresponding service by means of said console.

The present invention still further provides a multi-language communication method for communicating with a plurality of passengers, comprising:

providing to each of said passengers access to a plurality of language options;

receiving from each of one or more of said persons an indication of a respective choice of language chosen by said respective person from said language options; and

providing to each of said passengers who has chosen a language access to content in his or her respective language of choice.

- 14 -

Preferably the method includes providing to each of said passengers who has not chosen a language access to content in a principal language.

5 The content may be promotional material, educational material, entertainment, safety announcements, subtitles for movies, closed captioning, or otherwise, and could be provided by means of, for example, a visual display, an audio output device (such as a
10 headset), or both. Thus, a carrier (such as an airline) can provide passengers with information or other content in each passenger's language of choice.

Preferably the method includes making said respective
15 language choices accessible by a passenger attendant so that said attendant can anticipate the language needs of a respective passenger.

Preferably the method includes providing at least one
20 announcement to each of said passengers by means of a personal address system, wherein said announcement is in the respective language of choice of each passenger or, or, if no language was chosen by a respective passenger, in said principal language.

25 The announcement can be a text announcement displayed for each respective passenger on a display assigned to that respective passenger.

30 The announcement can be an audio or audio announcement directed for each respective passenger to an audio output assigned to that respective passenger, whereby each passenger can listen to said announcement, such

- 15 -

as by means of a headset. More preferably the method includes making said announcement in the form of a public announcement in said principal language over a public address system.

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The present invention still further provides a multi-language communication system for communicating with a plurality of passengers, comprising:

10 a database for storing a respective language choice of each of said passengers;

a control system operable to retrieve said language choices from said database and operable to provide each of said passengers with access to content in his or her respective language of choice or, if no language was chosen by a respective passenger, in a principal language;

15 a plurality of output devices, each assigned to a respective passenger for providing said content to said respective passenger in his or her respective language of choice or, if no language was chosen by a respective passenger, in a principal language.

Preferably said respective language choices are accessible by a passenger attendant so that said attendant can anticipate the language needs of a respective passenger.

Preferably said output device is a display, an audio output device (such as a headset), or both.

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The system preferably includes a plurality of consoles, each assigned to a respective passenger and operable by said passenger to make their respective

- 16 -

language choice from a plurality of language options, and to communicate said respective language choice to said database.

5 Preferably the system includes a plurality of personal address systems, each assigned to a respective passenger for providing at least one announcement to each of said passengers, wherein said announcement is in the respective language of choice of each passenger
10 or, or, if no language was chosen by a respective passenger, in said principal language.

The announcement can comprise visual material (such as text or text mixed with graphical elements)
15 displayable for each respective passenger on a display assigned to that respective passenger.

The announcement can be an audio announcement directed for each respective passenger to an audio output
20 assigned to that respective passenger, whereby each passenger can listen to said announcement, such as by means of a headset. More preferably the system includes a public address system for making said announcement in the form of a public announcement to
25 said passengers in said principal language.

Preferably said system is operable to receive said language choices from an operator who has received the respective language choices from one or more of the
30 passengers.

Thus, language choices could be provided at check-in and loaded into the database for later access by the

- 17 -

control system or attendants.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the present invention may be more
5 clearly ascertained, a preferred embodiment will now
be described, by way of example, with reference to the
accompanying drawings, in which:

Figure 1 is a schematic diagram of an in-
flight multi-language announcement system according to
10 a preferred embodiment of the present invention; and

Figure 2 is a view of the personal display
of the system of figure 1, displaying a language
option menu;

Figure 3 is a view of the personal display
15 of the system of figure 1, displaying a menu of items
that can be ordered from a cabin attendant; and

Figure 4 is a view of the personal display
of the system of figure 1, displaying a free-text
field for sending a message to a cabin attendant.

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DETAILED DESCRIPTION

An in-flight multi-language announcement system
according to a preferred embodiment of the present
invention is shown schematically at 10 in figure 1.
25 The system 10 includes a headend server 12, a cabin
management terminal 14 for operating and accessing
server 12, a plurality of galley terminals 16
(principally for receiving food and drink requests),
and a public address system 18 to allow cabin crew to
30 make announcements throughout the aircraft cabin to
the passengers (whether "live" or translated in real-
time by translation software on server 12 into one or
more chosen languages) and to broadcast prerecorded

- 18 -

announcements to the passengers.

It should be noted that galley terminals 16, although principally intended to provide communication with galley personnel as necessary for performing their tasks, are provided with full cabin management terminal functionality. This functionality can be used if required, such as if cabin management terminal 14 is malfunctioning or, for some reason, inaccessible. In addition, each galley terminal 16 can optionally be provided with any other desired application software.

System 10 also includes a plurality of personal seat monitors 20, one assigned to each passenger, each comprising a display 22 and a control console 24. Each display 22 can be operated by a means of its corresponding console 24. Each display 22 is optionally a "touch-screen" display and, if so, many of its functions can additionally be operated by touching the appropriate portion of the display.

Furthermore, system 10 includes a plurality of personal audio outputs 26 (typically an audio jack), one for each passenger, so that each passenger can connect a headset to the audio output in order to listen to music, movie soundtracks or other audio content.

Referring to figure 2, when a passenger first activates his or her monitor 20, the passenger is presented on his or her display 22 with a list of available language options. These options or in

- 19 -

written form in the appropriate language and script in each case.

The passenger selects the preferred language option either by means of his or her console 24 (or, if a touch-screen display is provided, by touching the relevant portion of display 22), and this language choice is then communicated to and stored in a database in server 12. This database records the language choice against the seat allocation from which the language choice was received. Those passengers who do not chose a language are assigned as a default the principal language of the flight, commonly English but dependent on the country in which the airline is based. However, such passengers (and, indeed, passengers who have chosen a language) can return to the list of language options shown in figure 2 at any time, and either choose a language as described above or update an earlier choice of language by essentially the same method.

Thereafter, announcements and other language-dependent material accessible by means of monitor 20 and displayable on display 22 are customized to the respective language choice of each passenger. This also includes instructions and the like displayed on each display 22 and transmitted to each audio output 26 concerning the use of the monitors 20 and the other facilities on the aircraft.

Thus, in-flight content, such as entertainment, information or promotional material, commonly includes audio or text components. These text components can

- 20 -

be, for example, information about the aircraft, services available on the aircraft or offered by the airline, safety, travel destinations or meal menus. These text components are displayed in each case on display 22 in the language choice of the respective passenger. This is accomplished by providing server 12 with multiple versions of each piece of content, each in one of the language options available to the passengers, including the principal language.

Alternatively, however, server 12 can be provided with a single master version of each piece of content (typically in the principal language); the master version of a requested piece of content is then translated in real-time by the aforementioned translation software on server 12 into the chosen language of each respective passenger to whom the content is to be delivered.

Other material or content may not normally have a text component but might have an optional text component. Such material includes movies, television programs, instructions items and other audiovisual entertainment, in which sub-titles may optionally be requested. If a passenger has selected, for example, Chinese and a particular movie - though otherwise available - is unavailable in a Chinese version, then an available version (such as English) will be displayed when requested by the passenger, but with Chinese sub-titles. Alternatively, if a Chinese version is available, the selection of a particular movie by a passenger who has previously indicated Chinese as their language of choice will automatically

- 21 -

prompt the Chinese version to be played.

These multiple versions of lengthier content may be stored in any suitable form. In this embodiment they
5 are stored in digitized form on server 12, or alternatively on magnetic or optical media playable on a suitable reader (such as a VCR, a DVD player, a PC with CD or DVD drive or a CD or DVD drive in server 12) that is controllable by server 12, and whose
10 outputs are selectively couplable to each monitor 20.

Public announcements (i.e. those broadcast over the public address system 18, which can include a large, shared screen for displaying visual content), which
15 include important safety announcements and information concerning imminent arrival at the destination, are broadcast in the principal language over the public address system 18 and in the respective language choice of each passenger over the respective audio
20 output 26 of each passenger. Visual versions of such announcements (comprising text and/or graphical material) may additionally be displayed on each passenger's corresponding visual display 22, with any text component in each respective passenger's chosen
25 language. Consequently, each passenger can listen to such content by means of a headset plugged into his or her audio output 26 (and optionally view the visual version). For example, a safety announcement might be in English when broadcast over the public address
30 system 18, but be heard simultaneously in Japanese through a headset plugged into the audio output 26 of a particular passenger that has chosen Japanese. The text of the announcement can optionally be displayed

- 22 -

in Japanese on that particular passenger's display 22.

It may optionally be desired, despite the above facility, to ensure that the most important
5 announcements are available to all passengers by means of the public address system 18. Some passengers, for example, may not be wearing their headset early in a flight. If so, such important announcements can be repeated just enough times so that a version in every
10 language actually chosen by any passenger is played. Alternatively, multiple language versions of the same announcement can be displayed simultaneously on a suitable screen or screens visible to all. In either case, the required number of versions will almost
15 always be many fewer than the number of passengers. The principal language version will generally either have been chosen by at least one passenger or assigned to at least one passenger (through their not choosing a language), so a version of the announcement in the
20 principal language will also be played. However, it will generally be desirable to play the principal language version even if no one chooses or is assigned the principal language.

25 It should also be noted that this can also be done in the airport, such as at the gate where passengers are waiting to board. If the language choices have been made earlier (such as at check-in), as will be discussed below, announcement made to the gate area
30 can be repeated in all requisite languages.

Each passenger may also communicate with a cabin attendant by means of a further screen displayable on

- 23 -

that passenger's respective display 22. Referring to figure 3, a passenger can use his or her respective console 24 to display on display 22 as screen 30 a list of items and services that can be requested from a cabin attendant. This screen 30, though illustrated with English text in figure 3, is in the chosen language of the respective passenger. Thus, using either console 24 or by touching the relevant portion of the display 22, the passenger can request items such as a newspaper, a pair of slippers, a drink, a snack, etc. In addition, screen 30 includes a "Call Attendant" field 32 which, when touched by the passenger or selected by means of the passenger's console 24, operates in the same manner as the passenger's call button to summon an attendant.

Referring to figure 4, in much the same way, a passenger can display screen 34 on his or her display 22. The instructions in screen 34 are in again the chosen language of the passenger (though, by way of example, in English as shown in figure 4). Screen 34 includes a free-text field 36, in which the passenger can enter text by means of that passenger's console 24, in the passenger's chosen language. This may, in some embodiments, be limited by the number of characters that can be produced by means of the keys of console 24. Optionally, console 24 can be provided with a microphone so that the passenger can dictate text to be entered into free-text field 36, whereby the words spoken by the passenger are converted into text by means of speech recognition software resident on server 12.

- 24 -

Once the required text has been entered into free-text field 36, the passenger activates (by touching or using console 24) the SEND button 38 to transmit the message in free-text field 36. Screen 34 also includes a "Call Attendant" field 40.

With both screen 30 and screen 34 of figure 3 and 4 respectively, when a passenger submits a request for an item or service, sends some free-text or summons an attendant, the passenger's monitor 20 transmits the relevant request to the most appropriate destination. Thus, if a passenger requests a snack by means of screen 30, that request is sent to a galley terminal 16 in the galley responsible for that passenger. Although the passenger views screen 30 in their chosen language, the request appears on the gallery terminal 16 in the principal language so that it can readily be interpreted by the relevant member of the cabin crew.

On the other hand, free-text entered in field 36 is sent to and displayed on cabin management terminal 14, having first been translated by means of the aforementioned translation software on server 12 into the principal language. For example, a French speaker might send a free text request reading "please wake me an hour from our destination" in French, but this request will be displayed on cabin management terminal 14 in the principal language, such as English. The cabin attendants need not necessarily, therefore, speak the passenger's language (in this example, French).

Similarly, a cabin attendant can operate cabin

- 25 -

management terminal 14 or a galley terminal 16 to send free-text messages and certain pre-programmed messages (both audio and in text form) to one of more selected passenger monitors 20 and/or audio outputs 26. If in the form of free-text, the message is translated by means of translation software on server 12 into the chosen language of each respective passenger before being displayed on their displays 22. If selected from a menu of prerecorded text or audio messages, the appropriate language version is transmitted to the respective display 22 and/or audio output 26. Importantly, therefore, the cabin attendant does not have to consider the language spoken by each passenger, as this is handled automatically by server 12 when forwarding the appropriate message or announcement.

Although, as discussed above, each passenger is responsible choosing and entering their preferred language, this information can be input by cabin attendants through cabin management terminal 14. This might be desired if, for example, a cabin attendant becomes aware that a particular passenger has been unable to operate his or her monitor 20 or has forgotten to do so. Indeed, this task can also be performed by ground crew through the booking, check-in or seat allocation systems. For example, a passenger could be asked, when booking a ticket, what the preferred language would be for announcements and the like in-flight, and the response can be entered into a central database. The relevant information is then copied to the corresponding database on server 12 of a particular flight. Thereafter each passenger can

- 26 -

modify that selection but in many cases would have no need to do so. A passenger would then automatically be played safety announcements, etc., before and after take-off in their chosen language without having to
5 operate their monitor 20. Information concerning the preferred language can also be tagged according to the passenger's "frequent flyer" membership number or airline club membership number so that their language choice is preserved for future flights and
10 automatically loaded into each subsequent aircraft's server 12.

Modifications within the scope of the invention may be readily effected by those skilled in the art. It is
15 to be understood, therefore, that this invention is not limited to the particular embodiments described by way of example hereinabove.